Job-Specific Environmental Awareness Training:
Regeneration of Mixed Bed Deionizer for NSLS Process Water Systems and Cooling Water System Maintenance

LS-ENV-WAT 050302 K:\erothman\EMS\cool-water\tr-coolw.doc

Course Objective The regeneration of the mixed bed resin deionizers and maintenance of the cooling water systems (HVAC systems including the cooling tower) have significant environmental aspects associated with their operation. This course has been designed to provide you with the job-specific information that you need know to protect the environment and to meet Laboratory and Government regulations for handling hazardous wastes. The contents of this training have been extracted from the NSLS PRM and BNL Subject Areas.

Description of Significant Environmental Aspect The regeneration of the deionizers results in the generation of industrial and hazardous wastes and liquid discharges that need to be controlled. Corrosion products in the process water systems result in the build up of metals in the filters. The regeneration process results in heavy metal release into the regeneration waste waters, potentially at levels that meet the definition of hazardous or industrial waste.

Maintenance of the cooling water systems involves discharges of cooling water to the sanitary and storm water systems. The water in the cooling tower system contains anti-corrosion and anti-foulant chemicals.

Authorization Requirements Only personnel authorized by your supervision are allowed to work unsupervised on regeneration of the deionizer or the cooling systems . As a minimum, such authorization requires the completion of job specific training established by your supervision, including this specific environmental awareness training. RCRA (Hazardous Waste Generator) training is also required for all members of the Utility Group.

Operational Controls System specific procedures have been developed to ensure proper regeneration and handling of the waste water produced by the mixed bed regeneration process. These procedures should always be used by personnel when regenerating the mixed bed resin deionizers. Always contact your supervision if you have questions about the procedure.

Cooling water may be directly discharged to sanitary or storm drains under normal conditions. You should be aware that if process problems are suspected to have caused water to become contaminated, or if water has an abnormal odor or color, it should be collected and sampled prior to discharge. Only qualified sampling technicians from the Environmental Services Division may conduct sampling for waste characterization.

Response to Leaks Technicians and engineers who are responsible for operating deionizing systems during regeneration should be sensitive to leaks to floor drains or other discharge points to the environment. Minor spills should be reported to your supervisor after taking steps to avoid discharge to drains. Major leaks should be secured to the extent possible and reported to the Lab emergency response number x2222 as soon as possible so that Sewage Treatment Plant and Environmental personnel can be prepared for potential impacts at the Sewage Treatment Plant.

Leaks from the cooling systems may discharge to either the sanitary or storm system, unless contamination is suspect as described above.

Your Role and Responsibility As a member of the operating group for the NSLS deionizer systems and cooling systems, it is important that you follow the procedures and other instructions established by your supervision and take prompt action in the event of spills. If you are ever in doubt regarding the proper course of action, contact your supervision or a member of the NSLS ESH Staff for advice on hazardous waste issues.

Potential Regulatory and Environmental Impacts Discharge of the waste water without confirmation of metal concentrations or pH level can result in violations of BNL release limits and RCRA hazardous waste regulations, and potentially result in contaminated soil or groundwater. In addition, improper drum storage of waste water can result in a violation of Suffolk County storage regulations. BNL is subject to

fines and penalties for such violations, and is responsible for the clean-up costs associated with any required remediation.

Pollution Prevention and Waste Minimization Please offer suggestions and comments to your supervision about pollution prevention and waste minimization. Recent efforts to reduce waste generation in this system include the use of pre-deionized make-up water to lower the frequency of resin bed regeneration. Other ideas may help continue this type of waste minimization.

Print Name	Sign Name	Life Number	Date

Signature conveys that you have read and understand this information.

NSLS Environmental Management Training

Background Environmental and hazardous waste management regulations are among the most sensitive and visible issues in the American society. At BNL, these regulations are indisputably the most sensitive topic within the ESH arena since environmental releases and the perception of poor waste handling practices were at the heart of the AUI discharge by DOE and in the development of the strong management emphasis on these issues. In light of the high visibility and sensitivity to these issues, BNL management committed to the development of an Environmental Management Program that met all the requirements of ISO 14001, an international organization which has adopted standards for many types of programs, including environmental management.

A key issue within ISO 14001 is the identification of all activities at a facility that are associated with significant environmental aspects. All activities involving a significant aspect are to be managed and controlled to ensure that no adverse environmental impact results. As a part of that program, all personnel whose work involves a significant environmental aspect[1] will be provided specific environmental awareness training relating to their duties.

There are several work activities at NSLS that are involved with our facilities' significant environmental aspects. These activities are:

- Regeneration of process water mixed bed deionizing and Cooling Water System Maintenance
- Machine shop operations
- Photographic dark room operations
- Vacuum pump maintenance
- Electrical/mechanical assembly
- Experimental Program
- 90 Day/Satellite Area Operation
- Silicon Crystal Etching

For each of these activities, job specific training has been developed to ensure knowledge of applicable requirements that should be followed to properly control the significant environmental aspects.

[1] Significant environmental aspects have been defined at BNL as involving any of the following issues:

- Generation of any amount of industrial, hazardous, radioactive, mixed, or medical wastes
- Air or liquid effluents or emissions exceeding defined values
- Storage or use of chemicals or radioactive material above certain thresholds